XXVIII. *On the Era of the Mahometans, called the Hejerà** (هجرة). *By* William Marſden, *Eſq.* *F. R. S. and A. S.*

Read June 12, 1788.

IN their computation of time, the Arabs, and other Mahometan nations, reckon by a year which is purely lunar. It has no reference to the ſolar revolutions, and is of courſe unconnected with the viciſſitude of ſeaſons. The purpoſe of its adoption appears to have been chiefly religious, for the regulation of faſts and ceremonies, rather than of the civil concerns of the people. Perhaps a conſcious ignorance in matters of ſcience might have determined the inſtitutors to prefer a period whoſe limits were marked and obvious to the ſenſes, to one whoſe ſuperior accuracy depended upon aſtronomical calculation; and it may alſo be conjectured, that their habits of life rendered the adjuſtment of the tropical year leſs intereſting to theſe turbulent and wandering fanatics, than to nations whoſe attention was directed to agriculture and other peaceful arts.

The era of the Mahometans, called by them the Hejerà, or Departure, is accounted from the year of the flight of Maho-

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As this mode of ſpelling the word differs from that commonly followed, it may be proper to obſerve, that the Arabic letters of which it is compoſed are *H, j, r, à* or *ah*, and that the ſupplied vowels are to be pronounced ſhort.

met,

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met, their prophet, from Mecca, in Arabia Petræa, to Medina, at that time called Yatreb, which was the thirteenth of his pretended miſſion, the year of Chriſt 622, and of the Julian period 5335. This event, but little memorable in itſelf, and deriving no celebrity from the circumſtances immediately attending it, was, eighteen years after, diſtinguiſhed by the Caliph OMAR, as the criſis of their new religion, and eſtabliſhed as an epoch, to which the dates of all the tranſactions of the faithful ſhould have reference in future (*a*) *. Previous to this, the people had been accuſtomed to compute from the commencement of a particular war, the day of a remarkable battle, or other occaſional event of importance to their little communities (*b*). Accordingly, MAHOMET is ſaid to have been born in the firſt year of the era of the *Elephant*, ſo called from an attack on the city and temple of Mecca, by a king of Abyſſinian race, in which thoſe animals were employed; and twenty years after this, the *impious* war, in which the animoſity of two contending tribes occaſioned them to violate the ſacred or interdicted months, appeared of conſequence ſufficient to give riſe to a new era. The uncertainty and confuſion produced by this fluctuation demanded a reform, and more forcibly in proportion as the intereſts and concerns of the growing empire extended themſelves. A diſpute between two individuals, reſpecting the year in which the term of an obligation for money ſhould be underſtood to expire (the parties being agreed as to the month), pointed out to the Caliph, to whoſe tribunal it was referred, the immediate neceſſity of enjoining the obſervance of a determinate era, in which the ſtrongeſt prejudices of the people ſhould be made to concur with the ſovereign authority. The date of the Hejerà was thenceforth expreſſed in all the public acts and letters.

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* See the authorities at the end, under this and the ſubſequent letters.

It muſt be underſtood, that although the account of the years, collectively conſidered, was vague, that of the months was certain, and their ſucceſſion at all times ſcrupulouſly attended to. OMAR did not think it expedient to attempt any innovation as to the time of beginning the year, againſt which the ideas of the people would have revolted; and therefore, although the eſcape of MAHOMET from the indignation of his fellow-citizens was effected, according to their records, on the firſt day of the third month, or Rabee prior (on the twelfth day of which he reached Medina), yet the Hejerà takes date from a period two months antecedent to this flight, namely, from the firſt day of Moharram, being the day on which immemorial cuſtom had eſtabliſhed the celebration of the feſtival of the new year (*c*).

The Arabian and Syrian Chriſtians, and the Mahometan aſtronomers in general, appear to have fixed this day to Thurſday the fifteenth of the Syro-Macedonian month Tamooz, anſwering to our July; but ſome among the latter, and moſt of their hiſtorical writers, refer it to the next day, Friday the ſixteenth, and this latter date has, in modern times, obtained almoſt univerſal acceptance (*d*). A religious preference which Friday claims above the reſt of the week, ſeems to have given effect to the arguments in its favour (*e*). The difference of opinion on this ſubject has ariſen, in the firſt place, from the uncertainty unavoidably attending a date, to be aſcertained, at a diſtant period of time, from the phaſe of the moon, which is retarded or advanced by ſo complicated a variety of circumſtances (*f*): and the ambiguity appears, in the ſecond place, to have been promoted by the cuſtom of the Arabs

Arabs beginning their day at ſun-ſet; conformably with which idea, the time when the moon became viſible at Mecca, being the evening of Thurſday the fifteenth, according to our mode of computation *, was to them the commencement of Friday; which Friday (beginning a few hours later) we term the ſixteenth of July. At that period the cycle of the ſun was 15; the cycle of the moon, or golden number, 15; the Roman indiction 10; and the dominical letter C.

The year of the Mahometans conſiſts of twelve lunar months, and no emboliſm being employed to adjuſt it to the ſolar period (as practiſed by the Chaldæans and Hebrews, who were in other particulars their guides, and anciently, it is ſaid, by the Arabs themſelves), the commencement of each ſucceſſive lunar year anticipates the completion of the ſolar, and revolves through all its ſeaſons, the months reſpectively preſerving no correſpondence (*g*).

In order to form a juſt and accurate idea of the length of this year, and of its component months, it will be neceſſary to diſtinguiſh two modes of eſtimating their commencement and duration. Theſe, though their difference is not progreſſive (never amounting to more than two whole days, and rarely to ſo much as one), may yet, if miſunderſtood, occaſion, in ſome inſtances, uncertainty and error: and more eſpecially as the writers on this ſubject have inadvertently fallen into contradictions, from neglecting to explain to their readers a diſtinction of which they muſt have been themſelves ſufficiently aware *. Theſe modes may be denominated the vulgar or practical, and the political or chronological reckoning.

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* The new moon happened in July 622, on the 14th day, at 5½ hours, A.M. Greenwich time, or about 8 hours Mecca time; and at ſun-ſet of the ſame day, the moon was 5¼ degrees before the ſun in longitude, and in 40 minutes ſouth latitude, and therefore about 4¾ degrees above the horizon. On the 15th, at ſun-ſet, it was 18 ¼ before the ſun in longitude, in 37′ north latitude, and about 15°¼ above the horizon, conſequently viſible with clear weather. The ſun ſets at Mecca, on the 15th July, at 6 h. 40′, and the twilight is there conſiderably ſhorter than in the high latitudes.

The vulgar or practical reckoning is that which eſtimates the commencement of the year, or firſt day of the month Moharram, from the appearance of the new moon, on the evening of the firſt or ſecond day after the conjunction, or from that time at which it might from its age be viſible, if not obſcured by the circumſtances of the weather, which is ſcarcely ever ſo ſoon as twenty-four hours, and ſeldom later than forty-eight hours, after the actual change. This appearance is announced by perſons placed on the pinnacles of the moſques or other elevated ſituations, to the people below, who welcome it with the ſound of inſtruments, firing of guns, and other demonſtrations of reſpect and zeal †. The month thus commenced is computed to laſt till the new moon again becomes viſible; and ſo of the remaining months, till ſhe has completed her twelfth lunation, and, emerging from the ſun's rays, marks the practical commencement of another year (*h*).

In the political or chronological mode of reckoning, the return of a new year, or the duration of the months which compoſe it, is not regulated either by the appearance of the moon, or the calculated period of conjunction, but according to a certain diviſion of a cycle of thirty years, adopted for this purpoſe.

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* The juſtice of this remark will appear evident by contraſting the authorities quoted under the letters (*h*) (*i*) and (*m*).

† Theſe ſalutations are more ſolemn or clamourous at the return of ſome months than of others, and particularly on the appearance which terminates the month of faſting, or Ramadan.

purpoſe *. Particular attention is due to the explanation of this mode, both as being more artificial and complex, and becauſe it ſerves to regulate the dates in matters of hiſtorical record, and indeed of all writings where pretenſion is made to accuracy (*k*). Upon this the Turkiſh, Mooriſh, and every ſyſtematic Mahometan calendar are founded.

The lunar month, or mean ſynodic revolution, according to the computation of the Arabian aſtronomers, conſiſts of 29 days, 12 hours, and 792 ſcruples or parts in 1080; and the year of 354 days, 8 hours, and 864 ſcruples. But, as the purpoſes of mankind require that the year ſhould contain an integral number of days, it became expedient to collect and diſpoſe of theſe fractional exceedings in a conſiſtent and practicable manner; and with this view, a cycle or period of thirty lunar years was choſen, as the loweſt number that admitted of their being formed into days, without ſenſible deficiency or remainder. Their ſum being 11 days, it was determined that 19 of thoſe thirty years ſhould be compoſed of 354 days, and 11 of 355 days each. The juſtneſs of this proportion will equally appear, if it be obſerved, that 8 hours and 864 ſcruples (or 48 minutes) conſtitute 11 parts in 30 of twenty-four hours, and conſequently in thirty years produce an exceſs of 11 whole days †. It remained next to be conſidered

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* A paſſage in ALFRAGANUS (who wrote about the year of Chriſt 950) would lead us to infer, that, beſide the two ways of computing time here diſtinguiſhed, the Aſtronomers were accuſtomed to follow a third, whoſe periods were marked by the conjunction of the luminaries: but, as this learned Mahometan was a profeſſed ſtudent of PTOLEMY's works (which in this place he quotes), we may conclude, that, when he ſpeaks of aſtronomers, he does not mean to confine the expreſſion to thoſe of his own country or religion (*i*).

† The mean ſynodic revolution being 29 d. 12 h. 44′ and nearly 3″, this cycle falls

dered in what order and method theſe additional or intercalary days ſhould be inſerted, ſo as to effect the compenſation required with as much equability as poſſible, and maintain a correſpondence, as near as circumſtances would admit, with the periods marked by the phaſes of the moon. The following are the years to which, for reaſons that ſhall be afterwards aſſigned, it was judged proper to annex an extraordinary day, and which (in contradiſtinction to thoſe 19 that have only 354 days) are termed *years of exceſs*, viz. the 2d, 5th, 7th, 10th, 13th, 16th, 18th, 21ſt, 24th, 26th, and 29th, of the cycle of thirty years.

Their months, conformably with thoſe of the Hebrew calendar, it was determined ſhould conſiſt alternately of 30 and 29 days; and therefore, in an ordinary or ſimple year of 354 days, the twelfth and laſt month, Dulhajee, would have only 29; but, in the years of exceſs, the intercalary day is added to this month, which is then made to conſiſt of 30 days, and the year, conſequently, of 355 days (*m*). Thus, for example, in the year of Chriſt 622, the Hejerà commenced on the 16th of July, with the Arabian month

	Days.		Days.
Moharram, which had	30	Moharram, in the 2d year, had	30
Safar - - -	29	Safar - - -	29
Rabee prior - -	30	Rabee prior - -	30
Carried over	89	Carried over	89

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falls ſhort of thirty complete lunar years, by ſomething more than 17′, and conſequently advances one day in about 2500 years. The Chaldæans, who made the time of the revolution to conſiſt of one ſcruple, or 1080th part of an hour, more than the Arabs thought fit to allow, were wonderfully near to the truth (*l*).

If, inſtead of thirty years, a cycle of nineteen had been choſen, and ſeven days intercalated, there would have been an exceſs of a thirtieth part of a day, which would have cauſed the reckoning to retrograde one day in 570 years.

Rabee

	Days.
Brought over	89
Rabee poſterior	29
Joomad prior	30
Joomad poſterior	29
Rajab	30
Saban	29
Ramadan	30
Sawal	29
Dulkaidat	30
Dulhajee	29
Days	354

Ended 5 July 623.

	Days.
Brought over	89
Rabee poſterior	29
Joomad prior	30
Joomad poſterior	29
Rajab	30
Saban	29
Ramadan	30
Sawal	29
Dulkaidat	30
Dulhajee	30
Days	355

Ended 25 June 624.

It may not be unintereſting to examine the rule by which the Arabians appear to have been guided, in placing the intercalary day at the end of thoſe particular years which have been ſpecified. It was obſerved, that the annual exceſs is calculated to be 11 parts in 30 of a day. At the commencement of the firſt year of their firſt cycle, they appear to have aſſumed the fact (ſomewhat capriciouſly) that there was then an exceſs of 11 parts, belonging to the preceding year, to be accounted for, or brought on. At the end of the firſt year there would conſequently be 22 ſuch parts; and at the end of the ſecond year 33 parts. Here then the firſt intercalary day was applied; that ſecond year was made to conſiſt of 355 days, and there remained 3 parts, over and above, to be carried on to the next.

At the expiration of the third year, the parts amounted to 14; of the fourth year, to 25; and of the fifth, to 36; when the intercalation was again applied, and a balance of 6 parts carried on. From this it will be underſtood in what manner the fractional exceedings of each year were combined and diſpoſed of through the ſucceeding years of the cycle; and it will be neceſſary only further to remark, that, when the aggregate of the fractions falls ſhort no more than 2 or 3 parts of the number of 30, they ſtill add the intercalary day, and deduct the deficiency from the exceſs of the following year, which, in the courſe of one cycle, takes place only three times. At the end of the 29th year, the accumulated fractions, amounting exactly to 30, are commenſurate with the intercalation then applied; and the exceſs of the 30th, or laſt year, is accounted for in the firſt intercalation of the ſucceeding period. The operation would doubtleſs have appeared more methodical, if the firſt intercalary day were not to have been added till the end of the third year, and the eleventh, or laſt, till the end of the 30th year or termination of the cycle. From this conſideration ſome commentators have been led to diſſent from the more general idea, as above given, and to ſuggeſt, that the emboliſm is in fact applied ſo ſoon after the commencement of the cycle, as the yearly accumulation of the fractional parts exceeds the ſum of half a day, or twelve hours, and that it accordingly is made to take place at the end of the ſecond year, becauſe the fractions then amount to 17 h. 36′, or 22 parts in 30; at the end of the fifth year, becauſe they then amount to 25; and at the end of the ſeventh year, to 17 parts; keeping thus as near as poſſible to the mean diviſion of time, by applying the compenſation before it is fully wanted. The effect, however, is in both caſes the ſame, and

and it is of but little moment to determine which theory is right*.

This cycle of thirty Mahometan years, contains 10,631 days, and is equal to 29 years and 39 days of our computation. The annual mean difference is 10 days and 21 hours nearly; which in common calculations, for ſhort periods of time, may be reckoned at 11 days, by which number the lunar year anticipates the ſolar.

Annexed hereto is a table exhibiting the correſpondence of the years of the Hejerà, from the eſtabliſhment of that epoch, with thoſe of the Chriſtian era, to the year of our Lord 2000. Until the beginning of the preſent century, it appears ſufficient to diſtinguiſh every tenth year; the intervals between which may be calculated with eaſe and preciſion, by attending to what has been ſaid reſpecting the cycle. From the year 1700 to the concluſion of the twentieth century, for the convenience of hiſtorians yet unborn, the commencement of each year of the Hejerà is aſcertained. Theſe tables are founded upon thoſe of GRAVIUS (J. GREAVES), in his Epochæ celebriores ULUG BEIGI, publiſhed in 1650; but as he, in conformity with the principles of this celebrated Tartarian aſtronomer †, has fixed the epoch of the Hejerà to the 15th July, inſtead of the 16th, or hiſtorical period, it was judged requiſite to add one day, throughout, to his calculations. The propriety of this alteration is ſtrengthened by the authority of other chronologiſts *, and by the practice of the modern almanacs †. It is alſo to be obſerved, that the tables of GRAVIUS, having been compoſed in the ſeventeenth century, are calculated both for paſt and future time, according to the old ſtyle; and as the change took place, in England, in September of the year 1752, it was neceſſary to adjuſt all the ſucceeding years to the new calendar. In order that a judgment may be formed of the correſpondence of the annual periods ſhewn by theſe tables, founded on the cycle of thirty years, which is adjuſted to the mean motion of the moon, with thoſe marked by the appearance of that planet, a ſhort table is ſubjoined, containing a compariſon of the reſults of the two modes of reckoning, during one cycle, commencing with the year of the Hejerà 1171 (*p*).

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* The former hypotheſis is ſupported by CHRISTMANNUS (Commentarius ad caput primum ALFRAGANI, 1590), who quotes many ancient authorities. PETAVIUS (PETEAU) (de Doctrinà Temporum, 1627) is inclined to give the preference to the latter, on the authority of PAULUS FOROSEMPRONIUS, and the probability of the matter (*n*). It does not appear at what time the uſe of this cycle was introduced, but probably ſubſequent to the eſtabliſhment of the era by OMAR, though he is ſaid to have been aſſiſted on that occaſion by a learned Perſian.

† ULUG BEIG was the grandſon of TIMUR the Great (TAMERLANE), to whoſe empire he ſucceeded on the death of his father SHAH RUKH. He was born in 1393, and died in 1449.

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* See Tables of the Hejerà in RICCIOLI, Chronologia Reformata, 1659. Ephemerides MAT. FRED. BECKII, 1695 (*o*).

† According to the original tables of GREAVES, the firſt day of Moharram, in the year of CHRIST 1783, falls on the 14th November, O.S., or 25th November, N.S.; and in 1784, on the 2d November, O.S., or 13th November, N.S.; whereas, by two almanacs, printed at Calcutta in Bengal, it appears, that the days ſhould be the 26th and 14th November. Of theſe almanacs, the one was compiled in the "Office of the Miſſion;" and the other by an ingenious aſtronomer from England; and both founded on the uſage of the Mahometans of India.

AUTHORITIES.

(*a*) "Epochæ verò hujus uſum introduxit OMAR, qui primus titulo hoc literas et diplomata ſignari juſſit; et quidem anno ejuſdem epochæ demum 18, menſe Gjumadâ poſteriore; ut ex Hiſtoriâ Sarac Ibn Amîdi, et aliunde liquet." GOLIUS, notæ in ALFERGANUM, 1669.

(*b*) "Antè illud tempus ſimilis quoque Arabibus mos fuerat putare ſuos annos à Bellorum initiis, et celebrioribus pugnis." GOLIUS ut ſuprà.

(*c*) "Arabes annos Higræ ſeu migrationis Muhammedicæ numerant à neomeniâ Muharram; licet Muhammed Meccâ exceſſerit die primo Rabiæ prioris, diebus 59 poſt epochæ ipſius diem." GOLIUS ut ſuprà.

(*d*) "Initium hujus epochæ eſt principium Moharram, illius anni in quo Propheta noſter MOHAMMADES à Meccâ ad Medinam migrabat; et illud ſecundùm medium calculum, eſt feria quinta (dies Jovis), ſed ſecundùm phaſim Lunæ, dies Veneris." ULUG BEIG, 1449, per GRAVIUM, 1650.

"Æra Arabum ducitur à principio ejus anni, quo Muhammed, relictâ Meccâ, commigravit Medinam: eratque iſtius anni initium feria quinta." ALFERGANUS, 950, per GOLIUM, 1669.

"Sequimur autem Saracenum, cùm facimus initium annorum Hegiræ à feriâ ſextâ: is enim ita ſcribit: 'Quidam incipiunt computationem menſium à nocte quintæ feriæ, et ponunt ibi Almuharam anni repulſionis: et quidam ponunt ipſum à nocte diei Veneris, et ſecundùm illud fixus eſt iſte noſter liber: quoniam iſte dies fuit initium anni veri, et eſt magis conveniens ortui novæ lunæ.' Ex quibus verbis perſpicere licet, nos Hegiram incipere à phaſi lunari, quæ incidit in principium feriæ ſextæ, et minimùm integro die poſt conjunctionem mediam ſolis et lunæ in oculos incurrit." CHRISTMANNUS, 1590.

(*e*) "At ſextus peculiariter dies Conventûs dicitur; quia eò, utpote ſibi ſacra, in templum cathedrale convenire ſolent." GOLIUS ut ſuprà.

"Commodùm igitur tunc evenit, ut in eundem diem feria ſexta, quæ Veneri conſecrata fuit, et neomenia popularis, ac luna corniculata, &c." PETAVIUS de Doctrina Temporum.

(*f*) "Cauſæ autem primam Lunæ viſionem vel retardantes vel promoventes, tres potiſſimùm in aſtronomiâ redduntur. Prima eſt obliquitas ſpheræ, longos vel breves occaſus adducens: in ſignis namque longarum deſcenſionum, nempe in Piſcibus, Ariete, et Tauro, fieri poteſt, ut prima phaſis Lunæ paulò poſt conjunctionem conſpiciatur. Altera cauſa eſt tempus conjunctionis Lunæ cum ſole circa limitem Boreum. Tertia denique, ſi luna ſit motu velox, qualis eſt circa Perigæum." HEVELII Selenographia, 1647.

(*g*) "Ita fit, ut primus illorum menſis, qui eſt Muharram, nullam certam in anno Juliano ſedem habeat; ſed quotannis antevertat; ac totum anni noſtri contextum peragret." PETAVIUS, Rationarium Temporum, 1702.

(*h*) "Mahomedani menſes hujus epochæ à phaſi novilunii ad phaſim ſequentis novilunii numerant. E duodecim menſibus annum conſtituunt. Anni, itaque, et menſes, ſecundùm eorum uſum, ſunt lunares veri." ULUG BEIG.

"Voluerant autem Arabes à veſperâ diem auſpicari; quoniam à phaſi lunari incipiunt numerare dies menſium." ALFRAGANUS, per CHRISTMANNUM.

"Omnes

"Omnes illæ gentes, quæ anno lunari ſunt uſæ, non ſolum hanc primam Lunæ apparitionem diligenter attenderunt, ſed etiam numerum principiumque cujuſlibet menſis ab eâ inierunt." HEVELIUS.

(*i*) "Menſes, ſecundùm PTOLEMÆUM, computantur ab unâ mediâ ſolis et lunæ conjunctione, uſque ad alteram: verus autem menſis incipit poſt digreſſum luminarium, elapſo uno die naturali." ALFRAGANUS, per CHRISTMANNUM.

(*k*) "Neque enim tempus quod à phaſi petitur, certò deſignari poteſt, hominibus præſertim longiùs diſſitis, aut poſt venturis; quod res civiles ac politicæ requirunt: aſtronomicæ verò et chronologicæ conſiſtere abſque eo neutiquam poſſunt. Sacræ, autem, quia juxta phaſin primùm inſtitutæ fuerant, juxta eandem quoque obſervari debuerunt." GOLIUS ut ſupra.

(*l*) "Satis intelligitur, voluiſſe Arabes de induſtriâ recedere à calendario Judaico, commodioremque annorum ſuorum periodem et rationem intercalandi obſervare." CHRISTMANNUS.

(*m*) "Aſtronomis, Moharram (menſis primus) triginta eſt dierum, et Safar (ſecundus) undetriginta, et ſimiliter menſium unus triginta dierum, et alius undetriginta uſque ad finem anni. Singulis autem annis tricenis, menſem Dulheggiah (poſtremum) undecies conſtituunt triginta dierum; atque hoc fit anno ſecundo, et quinto, &c." ULUG BEIG.

"Sunt autem menſes quidam 30, nonnulli 29 dierum; ut annus ſimplex conſtet 354 diebus. Menſes Arabum in phaſi lunari variant pro luminis additione vel diminutione: ideo rectè conſtitutum eſt, ut menſes alternatim ſint pleni et cavi. Spacio triginta annorum accreſcunt undecim dies intercalares: ratione veræ anni quantitatis, quæ ponitur 354 dierum et $\frac{11}{30}$ diei. Annus, in quo fractiones colliguntur, habet 7 menſes plenos et 5 cavos. Menſis cui adhibetur intercalatio ſemper eſt dierum 30; unde annus intercalaris nuncupatur, qui menſi

Dhilhaga (Dulhajee) diem adjicit, ut notum eſt omnibus." ALFRAGANUS, per CHRISTMANNUM.

(*n*) "Sed civili ratione tum dies unus intercalatur, cùm horariæ appendices dimidiatum diem ſuperant, ut Paulus exiſtimat. Alii ut CHRISTMANNUS, &c." PETAVIUS, Doctrina Temporum.

(*o*) "G. KIRCHIUS in calendario Chriſt°-Jud°-Turc°, præfati anni 1687 uno die ſeriùs dictum annum Turcarum recenſet." MAT. FRID. BECKIUS, Eph. 1695.

(*p*) "Non enim ſemper contingit, initium menſis, ratione, et calculi et primæ phaſeos, incidere in eundem diem: neque hoc fit, niſi tractu temporis ambo inter ſe æquentur." ALFERGANUS, per GOLIUM.

Table exhibiting the correſpondence of the years of the Hejerà with thoſe of the Chriſtian era.

An. Hej.	An. D.		Day.	An. Hej.	An. D.		Day.	An. Hej.	An. D.		Day.
1	622	16 July	F	181	797	5 Mar.	Su	361	971	24 Oct.	Tu
11	632	29 Mar.	Su	191	806	17 Nov.	Tu	371	981	7 July	Th
21	641	10 Dec.	M	201	816	30 July	W	381	991	20 Mar.	F
31	651	24 Aug.	W	211	826	13 Apr.	F	391	1000	1 Dec.	Su
41	661	7 May	F	221	835	26 Dec.	Su	401	1010	15 Aug.	Tu
51	671	18 Jan.	Sa	231	845	7 Sept.	M	411	1020	27 Apr.	W
61	680	1 Oct.	M	241	855	22 May	W	421	1030	9 Jan.	F
71	690	15 June	W	251	865	2 Feb.	F	431	1039	23 Sept.	Su
81	700	26 Feb.	Th	261	874	16 Oct.	Sa	441	1049	5 June	M
91	709	9 Nov.	Sa	271	884	29 June	M	451	1059	17 Feb.	W
101	719	24 July	M	281	894	13 Mar.	W	461	1068	31 Oct.	F
111	729	5 Apr.	Tu	291	903	24 Nov.	Th	471	1078	14 July	Sa
121	738	18 Dec.	Th	301	913	7 Aug.	Sa	481	1088	27 Mar.	M
131	748	31 Aug.	Sa	311	923	21 Apr.	M	491	1097	9 Dec.	W
141	758	14 May	Su	321	933	1 Jan.	Tu	501	1107	22 Aug.	Th
151	768	26 Jan.	Tu	331	942	15 Sept.	Th	511	1117	5 May	Sa
161	777	9 Oct.	Th	341	952	29 May	Sa	521	1127	17 Jan.	M
171	787	22 June	F	351	962	9 Feb.	Su	531	1136	29 Sept.	Tu

An. Hej.	An. D.		Day.	An. Hej.	An. D.		Day.	An. Hej.	An. D.		Day.
541	1146	13 June	Th	971	1563	21 Aug.	Sa	1139	1726	18 Aug.	Th
551	1156	25 Feb.	Sa	981	1573	3 May	Su	1140	1727	8 Aug.	Tu
561	1165	7 Nov.	Su	991	1583	15 Jan.	Tu	1141	1728	27 July	Sa
571	1175	22 July	Tu	1001	1592	28 Sept.	Th	1142	1729	16 July	W
581	1185	4 Apr.	Th	1011	1602	11 June	F	1143	1730	6 July	M
591	1194	16 Dec.	F	1021	1612	23 Feb.	Su	1144	1731	25 June	F
601	1204	29 Aug.	Su	1031	1621	6 Nov.	Tu	1145	1732	13 June	Tu
611	1214	13 May	Tu	1041	1631	20 July	W	1146	1733	3 June	Su
621	1224	24 Jan.	W	1051	1641	2 Apr.	F	1147	1734	23 May	Th
631	1233	7 Oct.	F	1061	1650	15 Dec.	Su	1148	1735	13 May	Tu
641	1243	21 June	Su	1071	1660	27 Aug.	M	1149	1736	1 May	Sa
651	1253	3 Mar.	M	1081	1670	11 May	W	1150	1737	20 Apr.	W
661	1262	15 Nov.	W	1091	1680	23 Jan.	F	1151	1738	10 Apr.	M
671	1272	29 July	F	1101	1689	5 Oct.	Sa	1152	1739	30 Mar.	F
681	1282	11 Apr.	Sa	1111	1699	19 June	M	1153	1740	18 Mar.	Tu
691	1291	24 Dec.	M					1154	1741	8 Mar.	Su
701	1301	6 Sept.	W	1112	1700	7 June	F	1155	1742	25 Feb.	Th
711	1311	20 May	Th	1113	1701	28 May	W	1156	1743	15 Feb.	Tu
721	1321	31 Jan.	Sa	1114	1702	17 May	Su	1157	1744	4 Feb.	Sa
731	1330	15 Oct.	M	1115	1703	6 May	Th	1158	1745	23 Jan.	W
741	1340	27 June	Tu	1116	1704	25 Apr.	Tu	1159	1746	13 Jan.	M
751	1350	11 Mar.	Th	1117	1705	14 Apr.	Sa	1160	1747	2 Jan.	F
761	1359	23 Nov.	Sa	1118	1706	4 Apr.	Th	1161	1747	22 Dec.	Tu
771	1369	5 Aug.	Su	1119	1707	24 Mar.	M	1162	1748	11 Dec.	Su
781	1379	19 Apr.	Tu	1120	1708	12 Mar.	F	1163	1749	30 Nov.	Th
791	1388	31 Dec.	Th	1121	1709	2 Mar.	W	1164	1750	19 Nov.	M
801	1398	13 Sept.	F	1122	1710	19 Feb.	Su	1165	1751	9 Nov.	Sa
811	1408	27 May	Su	1123	1711	8 Feb.	Th	1166	1752	8 Nov.	W
821	1418	8 Feb.	Tu	1124	1712	29 Jan.	Tu	1167	1753	29 Oct.	M
831	1427	22 Oct.	W	1125	1713	17 Jan.	Sa	1168	1754	18 Oct.	F
841	1437	5 July	F	1126	1714	7 Jan.	Th	1169	1755	7 Oct.	Tu
851	1447	19 Mar.	Su	1127	1714	27 Dec.	M	1170	1756	26 Sept.	Su
861	1456	3 Nov.	M	1128	1715	16 Dec.	F	1171	1757	15 Sept.	Th
871	1466	13 Aug.	W	1129	1716	5 Dec.	W	1172	1758	4 Sept.	M
881	1476	26 Apr.	F	1130	1717	24 Nov.	Su	1173	1759	25 Aug.	Sa
891	1486	7 Jan.	Sa	1131	1718	13 Nov.	Th	1174	1760	13 Aug.	W
901	1495	21 Sept.	M	1132	1719	3 Nov.	Tu	1175	1761	2 Aug.	Su
911	1505	4 June	W	1133	1720	22 Oct.	Sa	1176	1762	23 July	F
921	1515	15 Feb.	Th	1134	1721	11 Oct.	W	1177	1763	12 July	Tu
931	1524	29 Oct.	Sa	1135	1722	1 Oct.	M	1178	1764	1 July	Su
941	1534	13 July	M	1136	1723	20 Sept.	F	1179	1765	20 June	Th
951	1544	25 Mar.	Tu	1137	1724	9 Sept.	W	1180	1766	9 June	M
961	1553	7 Dec.	Th	1138	1725	29 Aug.	Su	1181	1767	30 May	Sa

An. Hej.	An. D.		Day.	An. Hej.	An. D.		Day.	An. Hej.	An. D.		Day.
1182	1768	18 May	W	1225	1810	5 Feb.	Tu	1268	1851	26 Oct.	M
1183	1769	7 May	Su	1226	1811	25 Jan.	Sa	1269	1852	14 Oct.	F
1184	1770	27 Apr	F	1227	1812	15 Jan.	Th	1270	1853	3 Oct.	Tu
1185	1771	16 Apr.	Tu	1228	1813	3 Jan.	M	1271	1854	23 Sept.	Su
1186	1772	5 Apr.	Su	1229	1813	23 Dec.	F	1272	1855	12 Sept.	Th
1187	1773	25 Mar.	Th	1230	1814	13 Dec.	W	1273	1856	31 Aug.	M
1188	1774	14 Mar.	M	1231	1815	2 Dec.	Su	1274	1857	21 Aug.	Sa
1189	1775	4 Mar.	Sa	1232	1816	20 Nov.	Th	1275	1858	10 Aug.	W
1190	1776	21 Feb.	W	1233	1817	10 Nov.	Tu	1276	1859	31 July	M
1191	1777	9 Feb.	M	1234	1818	30 Oct.	Sa	1277	1860	19 July	F
1192	1778	30 Jan.	F	1235	1819	19 Oct.	W	1278	1861	8 July	Tu
1193	1779	19 Jan.	Tu	1236	1820	8 Oct.	M	1279	1862	28 June	Su
1194	1780	8 Jan.	Sa	1237	1821	27 Sept.	F	1280	1863	17 June	Th
1195	1780	28 Dec.	Th	1238	1822	17 Sept.	W	1281	1864	5 June	M
1196	1781	17 Dec.	M	1239	1823	6 Sept.	Su	1282	1865	26 May	Sa
1197	1782	7 Dec.	Sa	1240	1824	25 Aug.	Th	1283	1866	15 May	W
1198	1783	26 Nov.	W	1241	1825	15 Aug.	Tu	1284	1867	4 May	Su
1199	1784	14 Nov.	Su	1242	1826	4 Aug.	Sa	1285	1868	23 Apr.	F
1200	1785	4 Nov.	F	1243	1827	24 July	W	1286	1869	12 Apr.	Tu
1201	1786	24 Oct.	Tu	1244	1828	13 July	M	1287	1870	2 Apr.	Su
1202	1787	13 Oct.	Sa	1245	1829	2 July	F	1288	1871	22 Mar.	Th
1203	1788	2 Oct.	Th	1246	1830	22 June	W	1289	1872	10 Mar.	M
1204	1789	21 Sept.	M	1247	1831	11 June	Su	1290	1873	28 Feb.	Sa
1205	1790	10 Sept.	F	1248	1832	30 May	Th	1291	1874	17 Feb.	W
1206	1791	31 Aug.	W	1249	1833	20 May	Tu	1292	1875	6 Feb.	Su
1207	1792	19 Aug.	Su	1250	1834	9 May	Sa	1293	1876	27 Jan.	F
1208	1793	9 Aug.	F	1251	1835	28 Apr.	W	1294	1877	15 Jan.	Tu
1209	1794	29 July	Tu	1252	1836	17 Apr.	M	1295	1878	4 Jan.	Sa
1210	1795	18 July	Sa	1253	1837	6 Apr.	F	1296	1878	25 Dec.	Th
1211	1796	7 July	Th	1254	1838	26 Mar.	Tu	1297	1879	14 Dec.	M
1212	1797	26 June	M	1255	1839	16 Mar.	Su	1298	1880	3 Dec.	Sa
1213	1798	15 June	F	1256	1840	4 Mar.	Th	1299	1881	22 Nov.	W
1214	1799	5 June	W	1257	1841	22 Feb.	Tu	1300	1882	11 Nov.	Su
1215	1800	24 May	Su	1258	1842	11 Feb.	Sa	1301	1883	1 Nov.	F
1216	1801	14 May	F	1259	1843	31 Jan.	W	1302	1884	20 Oct.	Tu
1217	1802	3 May	Tu	1260	1844	21 Jan.	M	1303	1885	9 Oct.	Sa
1218	1803	22 Apr.	M	1261	1845	9 Jan.	F	1304	1886	29 Sept.	Th
1219	1804	11 Apr.	Th	1262	1845	29 Dec.	Tu	1305	1887	18 Sept.	M
1220	1805	31 Mar.	M	1263	1846	19 Dec.	Su	1306	1888	7 Sept.	Sa
1221	1806	20 Mar.	F	1264	1847	8 Dec.	Th	1307	1889	27 Aug.	W
1222	1807	10 Mar.	W	1265	1848	26 Nov.	M	1308	1890	16 Aug.	Su
1223	1808	27 Feb.	Su	1266	1849	16 Nov.	Sa	1309	1891	6 Aug.	F
1224	1809	15 Feb.	Th	1267	1850	5 Nov.	W	1310	1892	25 July	Tu

An. Hej.	An. D.		Day.	An. Hej.	An. D.		Day.	An. Hej.	An. D.		Day.
1311	1893	14 July	Sa	1348	1929	7 June	Su	1385	1965	30 Apr.	Su
1312	1894	4 July	Th	1349	1930	27 May	Th	1386	1966	20 Apr.	F
1313	1895	23 June	M	1350	1931	17 May	Tu	1387	1967	9 Apr.	Tu
1314	1896	11 June	F	1351	1932	5 May	Sa	1388	1968	29 Mar.	Su
1315	1897	1 June	W	1352	1933	24 Apr.	W	1389	1969	18 Mar.	Th
1316	1898	21 May	Su	1353	1934	14 Apr.	M	1390	1970	7 Mar.	M
1317	1899	11 May	F	1354	1935	3 Apr.	F	1391	1971	25 Feb.	Sa
1318	1900	29 Apr.	Tu	1355	1936	22 Mar.	Tu	1392	1972	14 Feb.	W
1319	1901	18 Apr.	Sa	1356	1937	12 Mar.	Su	1393	1973	2 Feb.	Su
1320	1902	8 Apr.	Th	1357	1938	1 Mar.	Th	1394	1974	23 Jan.	F
1321	1903	28 Mar.	M	1358	1939	19 Feb.	Tu	1395	1975	12 Jan.	Tu
1322	1904	16 Mar.	F	1359	1940	8 Feb.	Sa	1396	1976	2 Jan.	Su
1323	1905	6 Mar.	W	1360	1941	27 Jan.	W	1397	1976	21 Dec.	Th
1324	1906	23 Feb.	Su	1361	1942	17 Jan.	M	1398	1977	10 Dec.	M
1325	1907	12 Feb.	Th	1362	1943	6 Jan.	F	1399	1978	30 Nov.	Sa
1326	1908	2 Feb.	Tu	1363	1943	26 Dec.	Tu	1400	1979	19 Nov.	W
1327	1909	21 Jan.	Sa	1364	1944	15 Dec.	Su	1401	1980	7 Nov.	Su
1328	1910	11 Jan.	Th	1365	1945	4 Dec.	Th	1402	1981	28 Oct.	F
1329	1910	31 Dec.	M	1366	1946	24 Nov.	Tu	1403	1982	17 Oct.	Tu
1330	1911	20 Dec.	F	1367	1947	13 Nov.	Sa	1404	1983	6 Oct.	Sa
1331	1912	9 Dec.	W	1368	1948	1 Nov.	W	1405	1984	25 Sept.	Th
1332	1913	28 Nov.	Su	1369	1949	22 Oct.	M	1406	1985	14 Sept.	M
1333	1914	17 Nov.	Th	1370	1950	11 Oct.	F	1407	1986	4 Sept.	Sa
1334	1915	7 Nov.	Tu	1371	1951	30 Sept.	Tu	1408	1987	24 Aug.	W
1335	1916	26 Oct.	Sa	1372	1952	19 Sept.	Su	1409	1988	12 Aug.	Su
1336	1917	16 Oct.	Th	1373	1953	8 Sept.	Th	1410	1989	2 Aug.	F
1337	1918	5 Oct.	M	1374	1954	28 Aug.	M	1411	1990	22 July	Tu
1338	1919	24 Sept.	F	1375	1955	18 Aug.	Sa	1412	1991	11 July	Sa
1339	1920	13 Sept.	W	1376	1956	6 Aug.	W	1413	1992	30 June	Th
1340	1921	2 Sept.	Su	1377	1957	27 July	M	1414	1993	19 June	M
1341	1922	22 Aug.	Th	1378	1958	16 July	F	1415	1994	8 June	F
1342	1923	12 Aug.	Tu	1379	1959	5 July	Tu	1416	1995	29 May	W
1343	1924	31 July	Sa	1380	1960	24 June	Su	1417	1996	17 May	Su
1344	1925	20 July	W	1381	1961	13 June	Th	1418	1997	7 May	F
1345	1926	10 July	M	1382	1962	2 June	M	1419	1998	26 Apr.	Tu
1346	1927	29 June	F	1383	1963	23 May	Sa	1420	1999	15 Apr.	Sa
1347	1928	18 June	W	1384	1964	11 May	W	1421	2000	4 Apr.	Th

Compariſon of the commencement of thirty ſucceſſive years, according to the diviſion of the cycle, and the appearance of the new moon.

	A. H.	A. C.	Cycle.	Conjunction.		☽ viſible.
				Day.	Hour.	
1	1171	1757	15 Sept.	13 Sept.	14	15 Sept.
2	–1172	1758	4 Sept.	2 Sept.	15	4 Sept.
3	1173	1759	25 Aug.	22 Aug.	16	24 Aug.
4	1174	–1760	13 Aug.	11 Aug.	1	12 Aug.
5	–1175	1761	2 Aug.	31 July	15	2 Aug.
6	1176	1762	23 July	21 July	9	23 July
7	–1177	1763	12 July	10 July	23	12 July
8	1178	–1764	1 July	29 June	8	30 June
9	1179	1765	20 June	18 June	11	20 June
10	–1180	1766	9 June	7 June	12	9 June
11	1181	1767	30 May	27 May	19	29 May
12	1182	–1768	18 May	16 May	8	17 May
13	–1183	1769	7 May	6 May	1	7 May
14	1184	1770	27 April	25 April	17	27 April
15	–1185	1771	16 April	15 April	3	16 April
16	1186	–1772	5 April	3 April	5	4 April
17	1187	1773	25 Mar.	23 Mar.	5	24 Mar.
18	–1188	1774	14 Mar.	12 Mar.	10	14 Mar.
19	1189	1775	4 Mar.	1 Mar.	22	3 Mar.
20	1190	–1776	21 Feb.	19 Feb.	13	21 Feb.
21	–1191	1777	9 Feb.	8 Feb.	5	9 Feb.
22	1192	1778	30 Jan.	28 Jan.	15	30 Jan.
23	1193	1779	19 Jan.	17 Jan.	18	19 Jan.
24	–1194	–1780	8 Jan.	6 Jan.	17	8 Jan.
25	1195	1780	28 Dec.	25 Dec.	20	27 Dec.
26	–1196	1781	17 Dec.	15 Dec.	6	16 Dec.
27	1197	1782	7 Dec.	4 Dec.	21	6 Dec.
28	1198	1783	26 Nov.	24 Nov.	13	26 Nov.
29	1199	–1784	14 Nov.	13 Nov.	1	14 Nov.
30	1200	1785	4 Nov.	2 Nov.	4	3 Nov.

The years marked thus – are the intercalated and biſſextile years in the Mahometan and Roman calendars.

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